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EXAMINER

SWERDLOW, DANIEL

ART UNIT

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12

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |
|------------------------------|------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|                              | 09/579,719             | WILDFEUE, HERBERT M |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |
|                              | Daniel Swerdlow        | 2644                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 01 June 2004.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1,2,4-16,18-25,27-31,33-36,38-42 and 44-81 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1,2,4-16,18-25,27-31,33-36,38-42 and 44-81 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1 June 2004 has been entered.

### ***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1, 2, 6, 8, 9, 12, 14 through 16, 38 and 40 through 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Interrante et al. (US Patent 6,011,783) in view of Fraser (US Patent 6,487,200) and further in view of Tendo (US Patent 5,752,761).
3. Claim 1 claims a method for testing an echo canceller. Interrante discloses a method for measuring the performance of (i.e., testing) an echo canceller (Fig. 1, reference 11; column 1, lines 55-58). Claim 1 further claims the method comprises generating an excitation signal including a preamble portion and a test portion. Interrante discloses a microprocessor that generates a control word that corresponds to the preamble portion claimed and test data that correspond to the test portion claimed (column 3, lines 9-19). Claim 1 further claims the method comprises encoding the preamble portion with configuration information relating to the echo canceller. Interrante discloses the control word that corresponds to the preamble portion claimed

containing (i.e., being encoded with) a timeslot during which the echo canceller will be placed in the performance measurement mode (i.e., configuration) (column 3, lines 16-19, 48-52, 63-66).

Claim 1 further claims the method comprises transmitting the excitation signal to the echo canceller. Interrante discloses the control word and test data being received from (i.e., transmitted by) a microprocessor (column 3, lines 9-11, 13-15). Therefore, Interrante anticipates all elements of Claim 1 except the excitation signal being packetized, generated external to the echo canceller and transmitted through a network. Fraser discloses use of packets sent through a network to control diagnostic testing of network devices (column 16, lines 7-23). It would have been obvious to one skilled in the art at the time of the invention to apply packet controlled diagnostic testing as taught by Fraser to the method taught by Interrante for the purpose of greatly simplifying the telephone system. Therefore, the combination of Interrante and Fraser makes obvious all elements of Claim 1 except the packet including control and test portions. Tendo discloses testing over a packet network using a test packet that includes a control unit (i.e., control portion) and a data unit (i.e., test portion) (Fig. 11, reference D1, D2; column 9, lines 7-12). It would have been obvious to one skilled in the art at the time of the invention to apply the packet structure taught by Tendo to the combination made obvious by Interrante and Fraser for the purpose of communicating test signals over the packet network.

4. Claim 2 claims the method of Claim 1 including taking a performance measurement responsive to the preamble portion. As stated above apropos of Claim 1, the combination of Interrante, Fraser and Tendo makes obvious all elements of that claim. In addition, Interrante discloses performance measurement being done during a timeslot specified in the control word

that corresponds to the preamble claimed (column 3, lines 16-19, 48-52, 63-66). Therefore, the combination makes obvious all elements of Claim 2.

5. Claim 6 claims the method of Claim 1 including encoding a test identifier in the preamble portion. As stated above apropos of Claim 1, the combination of Interrante, Fraser and Tendo makes obvious all elements of that claim. In addition, Interrante discloses encoding a number identifying the timeslot to be tested (column 3, lines 31-33). Therefore, the combination of Interrante, Fraser and Tendo makes obvious all elements of Claim 6.

6. Claim 8 claims the method of Claim 1 including encoding the preamble portion in such a way as to be capable of being differentiated from the test portion. As stated above apropos of Claim 1, the combination of Interrante, Fraser and Tendo makes obvious all elements of that claim. In addition, Interrante discloses storage of the control word that corresponds to the preamble portion claimed in a register (Fig. 1, reference 21; column 3, lines 9-11) and storage of the test data that corresponds to the test portion claimed in a shift register (Fig. 1, reference 24; column 3, lines 13-15). As such, the portions are inherently differentiable. Therefore, the combination of Interrante, Fraser and Tendo makes obvious all elements of Claim 8.

7. Claim 9 is essentially similar to Claim 1 and is rejected for the same reasons.

8. Claim 12 is essentially similar to Claim 6 and is rejected for the same reasons.

9. Claims 14 is essentially similar to Claim 8 and is rejected for the same reasons.

10. Claim 15 claims the method of Claim 9 including controlling the echo canceller during testing to within a single sample time of the excitation signal. As stated above apropos of Claim 9, the combination of Interrante, Fraser and Tendo makes obvious all elements of that claim. In addition, Interrante discloses control of the echo canceller for a specific timeslot (i.e., sample

time) (column 3, lines 11-13). Therefore, the combination of Interrante, Fraser and Tendo makes obvious all elements of Claim 15.

11. Claim 16 claims the method of Claim 15 including controlling the echo canceller during testing to within 125 microseconds. As stated above apropos of Claim 15, the combination of Interrante, Fraser and Tendo makes obvious all elements of that claim. Therefore, the combination of Interrante, Fraser and Tendo is shown to make obvious all elements of Claim 16 with the exception of controlling the echo canceller during testing to within 125 milliseconds. Examiner has taken uncontested Official Notice of the fact that a time slot on a DS1 signal has a duration of  $1/(8000 \times 24)$  seconds or 5.2 microseconds. It would have been obvious to one skilled in the art at the time of the invention to control the combination of Interrante, Fraser and Tendo to within 5.2 microseconds for the purpose of selecting a timeslot within a DS1 signal.

12. Claim 38 claims a computer readable medium containing instructions that when executed are essentially similar to the method of Claim 1. As stated above apropos of Claim 1, the combination of Interrante, Fraser and Tendo makes obvious all elements of that claim. In addition, Interrante discloses the method being implemented by a microprocessor (column 3, lines 9-19) that inherently executes instructions on a computer readable medium. Therefore, the combination of Interrante, Fraser and Tendo makes obvious all elements of Claim 38.

13. Claims 40 and 41 claim a computer readable medium containing instructions that when executed are essentially similar to the method of Claim 6. As stated above apropos of Claim 6, the combination of Interrante, Fraser and Tendo makes obvious all elements of that claim. In addition, Interrante discloses the method being implemented by a microprocessor (column 3,

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lines 9-19) that inherently executes instructions on a computer readable medium. Therefore, the combination of Interrante, Fraser and Tendo makes obvious all elements of Claims 40 and 41.

14. Claim 42 claims a computer readable medium containing instructions that when executed are essentially similar to the method of Claim 8. As stated above apropos of Claim 8, the combination of Interrante, Fraser and Tendo makes obvious all elements of that claim. In addition, Interrante discloses the method being implemented by a microprocessor (column 3, lines 9-19) that inherently executes instructions on a computer readable medium. Therefore, the combination of Interrante, Fraser and Tendo makes obvious all elements of Claim 42.

15. Claims 5, 7, 9, 11, 13, 18 through 21, 23, 25, 27 through 30, 33 through 36, 45 through 47, 49, 51, 52, 55, 57 through 61, 63, 64, 72, 74, 75 and 77 through 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Interrante in view of Fraser and further in view of Tendo and further in view of Légaré.

16. Regarding Claim 5, as shown above apropos of Claim 1, the combination of Interrante, Fraser and Tendo makes obvious all elements of Claim 5 except encoding instructions in the preamble portion that when executed by the echo canceller result in disabling a processor in the echo canceller. Légaré discloses an automated method for testing a transmission line including echo cancellers that includes disabling the echo canceller (column 8, line 65 through column 9, line 1). It would have been obvious to one skilled in the art at the time of the invention to apply echo canceller disabling as taught by Légaré to the combination made obvious by Interrante, Fraser and Tendo for the purpose of evaluating the same parameters under different conditions.

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17. Claim 7 claims the method of Claim 1 including encoding a test signal identifier in the preamble portion. As stated above apropos of Claim 1, the combination of Interrante, Fraser and Tendo makes obvious all elements of that claim. Therefore, the combination makes obvious all elements of Claim 7 except encoding a test signal identifier in the preamble portion. Légaré discloses an automated method for testing a transmission line including echo cancellers that includes test initialization (column 4, lines 46-51). It would have been obvious to one skilled in the art at the time of the invention to apply test initialization as taught by Légaré to the method made obvious by Interrante, Fraser and Tendo for the purpose of setting up the desired mode of operation.

18. Claim 11 is essentially similar to Claim 5 and is rejected for the same reasons.

19. Claims 13, 20, 23, 29, 35 and 55 are essentially similar to Claim 7 and are rejected for the same reasons.

20. Claim 18 claims the system of Claim 20 including tail circuit emulating means for generating an echo back signal responsive to the test portion of the excitation signal. As stated above apropos of Claim 20, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses an echo path simulator (Fig. 1, reference 30; column 2, lines 55-61) that corresponds to the tail circuit emulating means claimed and simulates an echo path of the communications network (i.e., generates an echo back signal) (column 3, lines 24-28) in response to test data (column 3, lines 38-41) that corresponds to the test portion claimed. Claim 18 further claims the system includes recording means for recording any received echo signal allowed to pass through the echo canceller. Interrante discloses a test data extraction unit (Fig. 1, reference 40; column 2, lines 62-67) that corresponds

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to the recording means claimed and stores (i.e., records) echo-cancelled test data (i.e., any received echo signal allowed to pass through the echo canceller) (column 4, lines 1-5).

Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 18.

21. Claim 19 claims the system of Claim 20 wherein the preamble portion sets timing associated with performance tests defined in ITU-T G.165 and G.168 standards. As stated above apropos of Claim 20, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses encoding test timing instruction in the control word that corresponds to the preamble portion claimed. Therefore, the combination of Interrante, Fraser, Tendo and Légaré is shown to make obvious all elements of Claim 19 with the exception of using performance tests defined in ITU-T G.165 and G.168 standards. It would have been obvious to one skilled in the art at the time of the invention to apply the use of performance tests defined in ITU-T G.165 and G.168 standards to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of conforming to established standards.

22. Claim 21 claims the system of Claim 20 wherein the preamble portion identifies a performance test. As stated above apropos of Claim 20, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses encoding a number identifying the timeslot to be tested (column 3, lines 31-33). Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 21.

23. Claim 25 claims the system of Claim 23 wherein the decoding means differentiates the preamble portion from the test portion. As stated above apropos of Claim 23, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition,

Interrante discloses storage of the control word that corresponds to the preamble portion claimed in a register (Fig. 1, reference 21; column 3, lines 9-11) and storage of the test data that corresponds to the test portion claimed in a shift register (Fig. 1, reference 24; column 3, lines 13-15). As such, the portions are inherently differentiated. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 25.

24. Claim 27 claims the system of Claim 29 including tail circuit emulator for generating an echo back signal responsive to the test portion of the excitation signal. As stated above apropos of Claim 29, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses an echo path simulator (Fig. 1, reference 30; column 2, lines 55-61) that corresponds to the tail circuit emulator claimed and simulates an echo path of the communications network (i.e., generates an echo back signal) (column 3, lines 24-28) in response to test data (column 3, lines 38-41) that corresponds to the test portion claimed. Claim 27 further claims the system includes a recorder for recording any received echo signal allowed to pass through the echo canceller. Interrante discloses a test data extraction unit (Fig. 1, reference 40; column 2, lines 62-67) that corresponds to the recording means claimed and stores (i.e., records) echo-cancelled test data (i.e., any received echo signal allowed to pass through the echo canceller) (column 4, lines 1-5). Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 27.

25. Claim 28 claims the system of Claim 29 wherein the preamble portion sets timing associated with performance tests defined in ITU-T G.165 and G.168 standards. As stated above apropos of Claim 29, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses encoding test timing instruction in the

control word that corresponds to the preamble portion claimed. Therefore, the combination is shown to make obvious all elements of Claim 28 with the exception of using performance tests defined in ITU-T G.165 and G.168 standards. It would have been obvious to one skilled in the art at the time of the invention to apply the use of performance tests defined in ITU-T G.165 and G.168 standards to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of conforming to established standards.

26. Claim 30 claims the system of Claim 29 wherein the preamble portion identifies a performance test. As stated above apropos of Claim 29, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses encoding a number identifying the timeslot to be tested (column 3, lines 31-33). Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 30.

27. Claim 33 claims the method of Claim 35 including encoding the preamble portion in such a way as to be capable of being differentiated from the test portion. As stated above apropos of Claim 35, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses storage of the control word that corresponds to the preamble portion claimed in a register (Fig. 1, reference 21; column 3, lines 9-11) and storage of the test data that corresponds to the test portion claimed in a shift register (Fig. 1, reference 24; column 3, lines 13-15). As such, the portions are inherently differentiable. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 33.

28. Claim 34 claims the echo canceller of Claim 35 wherein the decoder extracts control information from the preamble portion. As stated above apropos of Claim 35, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition,

Interrante discloses control logic that corresponds to the decoder claimed utilizing the control word that corresponds to the preamble portion to determine the time slot for testing (i.e., control information) (column 3, lines 9-13). Claim 34 further claims the controller controls the echo canceller responsive to the control information. Interrante discloses injecting test data into (i.e., controlling) the echo canceller (column 3, lines 13-15) in response to the time slot information that corresponds to the control information claimed. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 34.

29. Claim 36 is essentially similar to Claim 30 and is rejected for the same reasons.
30. Claim 45 claims a computer readable medium containing instructions that when executed are essentially similar to the method of Claim 11. As stated above apropos of Claim 11, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses the method being implemented by a microprocessor (column 3, lines 9-19) that inherently executes instructions on a computer readable medium. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 45.
31. Claim 46 claims the computer readable medium of Claim 45 including identifying a test responsive to the preamble portion. As stated above apropos of Claim 45, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses encoding a number identifying the timeslot to be tested (column 3, lines 31-33). Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 46.
32. Claim 47 claims a computer readable medium containing instructions that when executed are essentially similar to the method of Claim 13. As stated above apropos of Claim 13, the

combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim.

In addition, Interrante discloses the method being implemented by a microprocessor (column 3, lines 9-19) that inherently executes instructions on a computer readable medium. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 47.

33. Claim 48 claims the computer readable medium of Claim 45 including differentiating the preamble portion from the test portion. As stated above apropos of Claim 45, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses storage of the control word that corresponds to the preamble portion claimed in a register (Fig. 1, reference 21; column 3, lines 9-11) and storage of the test data that corresponds to the test portion claimed in a shift register (Fig. 1, reference 24; column 3, lines 13-15). As such, the portions are inherently differentiated. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 48.

34. Claim 49 claims the method of Claim 5 including taking a performance measurement responsive to the preamble portion. As stated above apropos of Claim 5, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses performance measurement being done during a timeslot specified in the control word that corresponds to the preamble claimed (column 3, lines 16-19, 48-52, 63-66). Therefore, the combination makes obvious all elements of Claim 49.

35. Claim 51 claims the method of Claim 5 including encoding a test identifier in the preamble portion. As stated above apropos of Claim 5, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses

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encoding a number identifying the timeslot to be tested (column 3, lines 31-33). Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 51.

36. Claim 52 claims the method of Claim 5 including encoding the preamble portion in such a way as to be capable of being differentiated from the test portion. As stated above apropos of Claim 5, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses storage of the control word that corresponds to the preamble portion claimed in a register (Fig. 1, reference 21; column 3, lines 9-11) and storage of the test data that corresponds to the test portion claimed in a shift register (Fig. 1, reference 24; column 3, lines 13-15). As such, the portions are inherently differentiable. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 52.

37. Claim 54 claims the method of Claim 9 including disabling a processor in the echo canceller responsive to the preamble portion. As stated above apropos of Claim 9, the combination of Interrante, Fraser and Tendo makes obvious all elements of that claim. Légaré discloses an automated method for testing a transmission line including echo cancellers that includes disabling the echo canceller (column 8, line 65 through column 9, line 1). It would have been obvious to one skilled in the art at the time of the invention to apply echo canceller disabling as taught by Légaré to the combination of Interrante, Fraser and Tendo for the purpose of evaluating the same parameters under different conditions.

38. Claim 57 is essentially similar to Claim 51 and is rejected for the same reasons.

39. Claim 58 claims the method of Claim 11 including identifying a type of test signal responsive to the preamble portion. As stated above apropos of Claim 11, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. Therefore, the

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combination is shown to make obvious all elements of Claim 58 except identifying a type of test signal responsive to the preamble portion. Légaré discloses an automated method for testing a transmission line including echo cancellers that includes test initialization (column 4, lines 46-51). It would have been obvious to one skilled in the art at the time of the invention to apply test initialization as taught by Légaré to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of setting up the desired mode of operation.

40. Claim 59 claims the method of Claim 11 including differentiating the preamble portion from the test portion. As stated above apropos of Claim 11, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses storage of the control word that corresponds to the preamble portion claimed in a register (Fig. 1, reference 21; column 3, lines 9-11) and storage of the test data that corresponds to the test portion claimed in a shift register (Fig. 1, reference 24; column 3, lines 13-15). As such, the portions are inherently differentiated. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 59.

41. Claim 60 claims the method of Claim 11 including controlling the echo canceller during testing to within a single sample time of the excitation signal. As stated above apropos of Claim 11, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses control of the echo canceller for a specific timeslot (i.e., sample time) (column 3, lines 11-13). Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 60.

42. Claim 61 claims the method of Claim 11 including controlling the echo canceller during testing to within 125 microseconds. As stated above apropos of Claim 11, the combination of

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Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. Therefore, the combination of Interrante, Fraser, Tendo and Légaré is shown to make obvious all elements of Claim 61 with the exception of controlling the echo canceller during testing to within 125 milliseconds. Examiner has taken uncontested Official Notice of the fact that a time slot on a DS1 signal has a duration of  $1/(8000 \times 24)$  seconds or 5.2 microseconds. It would have been obvious to one skilled in the art at the time of the invention to control the combination of Interrante, Fraser, Tendo and Légaré to within 5.2 microseconds for the purpose of selecting a timeslot within a DS1 signal.

43. Claim 63 claims the system of Claim 23 wherein the decoding means disables a processor in the echo canceller responsive to the preamble portion. As stated above apropos of Claim 23, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. Further, as stated above apropos of Claim 1, Interrante discloses a control word that corresponds to the preamble portion claimed and causes test data to be delivered to the echo canceller. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 63 with the exception of disabling a processor in the echo canceller. Légaré discloses an automated method for testing a transmission line including echo cancellers that includes disabling the echo canceller (column 8, line 65 through column 9, line 1). It would have been obvious to one skilled in the art at the time of the invention to apply echo canceller disabling as taught by Légaré to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of evaluating the same parameters under different conditions.

44. Claim 64 claims the method of Claim 23 including controlling the echo canceller during testing to within a single sample time of the excitation signal. As stated above apropos of Claim

23, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses control of the echo canceller for a specific timeslot (i.e., sample time) (column 3, lines 11-13). Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 64.

45. Claim 72 claims the medium of Claim 45 including identifying a type of test signal responsive to the preamble portion. As stated above apropos of Claim 45, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. Therefore, the combination is shown to make obvious all elements of Claim 72 except identifying a type of test signal responsive to the preamble portion. Légaré discloses an automated method for testing a transmission line including echo cancellers that includes test initialization (column 4, lines 46-51). It would have been obvious to one skilled in the art at the time of the invention to apply test initialization as taught by Légaré to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of setting up the desired mode of operation.

46. Claim 74 claims the medium of Claim 47 including identifying a test to be performed on the echo canceller responsive to the preamble portion. As stated above apropos of Claim 47, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses encoding a number identifying the timeslot to be tested (column 3, lines 31-33). Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 74.

47. Claim 75 claims the medium of Claim 47 including differentiating the preamble portion from the test portion. As stated above apropos of Claim 47, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante

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discloses storage of the control word that corresponds to the preamble portion claimed in a register (Fig. 1, reference 21; column 3, lines 9-11) and storage of the test data that corresponds to the test portion claimed in a shift register (Fig. 1, reference 24; column 3, lines 13-15). As such, the portions are inherently differentiated. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 75.

48. Claim 77 claims the medium of Claim 23 wherein the preamble portion identifies a type of test portion. As stated above apropos of Claim 23, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses encoding a number identifying the timeslot to be tested (column 3, lines 31-33). Therefore, the combination makes obvious all elements of Claim 77.

49. Claim 78 claims the medium of Claim 29 wherein the preamble portion identifies a type of test portion. As stated above apropos of Claim 29, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses encoding a number identifying the timeslot to be tested (column 3, lines 31-33). Therefore, the combination makes obvious all elements of Claim 78.

50. Claim 79 claims the medium of Claim 35 wherein the preamble portion identifies a type of test portion. As stated above apropos of Claim 35, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses encoding a number identifying the timeslot to be tested (column 3, lines 31-33). Therefore, the combination makes obvious all elements of Claim 79.

51. Claim 80 claims the computer readable medium of Claim 38 measuring a performance parameter a predetermined time before application of the test portion. As stated above apropos

of Claim 38, the combination of Interrante, Fraser and Tendo makes obvious all elements of that claim. Therefore, the combination of Interrante, Fraser and Tendo makes obvious all elements of Claim 80 with the exception of measuring a performance parameter a predetermined time before application of the test portion. Légaré discloses an automated method for testing a transmission line including echo cancellers that includes measuring echo before activating the echo canceller for testing (column 6, lines 49-52; column 9, lines 1-8). It would have been obvious to one skilled in the art at the time of the invention to apply echo premeasurement as taught by Légaré to the combination of Interrante, Fraser and Tendo for the purpose of evaluating the same parameters under different conditions.

52. Claim 81 claims the computer readable medium of Claim 45 comprising disabling a processor in the echo canceller. As stated above apropos of Claim 45, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. Further, as stated above apropos of Claim 1, Interrante discloses a control word that corresponds to the preamble portion claimed and causes test data to be delivered to the echo canceller. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 81 with the exception of the test data resulting in disabling the echo canceller. Légaré discloses an automated method for testing a transmission line including echo cancellers that includes disabling the echo canceller (i.e., instructions related to an adaptation function in the echo canceller) (column 8, line 65 through column 9, line 1). It would have been obvious to one skilled in the art at the time of the invention to apply echo canceller disabling as taught by Légaré to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of evaluating the same parameters under different conditions.

53. Claims 39, 70, 71 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Interrante in view of Fraser and further in view of Tendo and further in view of Meek (US Patent 5,745,564).

54. Claims 39 and 70 claim a computer readable medium containing instructions that when executed are essentially similar to the method of Claim 1 with the additional limitation of measuring combined loss. As stated above apropos of Claim 1, the combination of Interrante, Fraser and Tendo makes obvious all elements of that claim. In addition, Interrante discloses the method being implemented by a microprocessor (column 3, lines 9-19) that inherently executes instructions on a computer readable medium. Therefore, the combination of Interrante, Fraser and Tendo makes obvious all elements of Claims 39 and 70 except measuring combined loss. Meek discloses measuring convergence (i.e., echo canceller performance) with combined attenuation (i.e., combined loss). It would have been obvious to one skilled in the art at the time of the invention to apply echo canceller performance measurement by combined attenuation as taught by Meek to the combination of Interrante, Fraser and Tendo for the purpose of determining echo canceller performance.

55. Claim 71 claims the medium of Claim 39 including encoding information identifying a type of test portion in the preamble portion. As stated above apropos of Claim 39, the combination of Interrante, Fraser, Tendo and Meek makes obvious all elements of that claim. In addition, Interrante discloses encoding a number identifying the timeslot to be tested (column 3, lines 31-33). Therefore, the combination of Interrante, Fraser, Tendo and Meek makes obvious all elements of Claim 71.

56. Claim 76 claims the method of Claim 2 further comprising measuring a combined loss a predetermined time before receiving the test portion. As stated above apropos of Claim 2, the combination of Interrante, Fraser and Tendo makes obvious all elements of that claim. In addition, Interrante discloses the method being implemented by a microprocessor (column 3, lines 9-19) that inherently performs functions according to a program (i.e., at a predetermined time). Therefore, the combination of Interrante, Fraser and Tendo makes obvious all elements of Claim 76 except measuring combined loss. Meek discloses measuring convergence (i.e., echo canceller performance) with combined attenuation (i.e., combined loss). It would have been obvious to one skilled in the art at the time of the invention to apply echo canceller performance measurement by combined attenuation as taught by Meek to the combination of Interrante, Fraser and Tendo for the purpose of determining echo canceller performance.

57. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Interrante in view of Fraser and further in view of Tendo and further in view of Tol et al. (US Patent 4,918,685).

58. Claim 4 claims the method of Claim 1 including instructions in the preamble portion that when executed by the echo canceller result in inhibiting adaptation and clearing a register in the echo canceller. As stated above apropos of Claim 1, the combination of Interrante, Fraser and Tendo makes obvious all elements of that claim. Further, as stated above apropos of Claim 1, Interrante discloses a control word that corresponds to the preamble portion claimed and causes test data to be delivered to the echo canceller. Therefore, the combination of Interrante, Fraser and Tendo makes obvious all elements of Claim 4 with the exception of the test data resulting in

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inhibiting adaptation and clearing a register in the echo canceller. Tol discloses echo canceller testing by applying a random data sequence that results in the echo canceller coefficients being adjusted to zero (i.e., inhibiting adaptation and clearing a register) (column 2, lines 23-37). It would have been obvious to one skilled in the art at the time of the invention to apply the random test signal taught by Tol to the combination of Interrante, Fraser and Tendo for the purpose of determining if the echo canceller is functioning in the proper manner.

59. Claim 10 is essentially similar to Claim 4 and is rejected for the same reasons.

60. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Interrante in view of Fraser and further in view of Légaré and further in view of Tendo and further in view of Meeks.

61. Claim 53 claims the method of Claim 5 including measuring a combined loss a predetermined time before receiving the test portion. As stated below apropos of Claim 5, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. Therefore, the combination is shown to make obvious all elements of Claim 53 except measuring a combined loss a predetermined time before receiving the test portion. Légaré discloses an automated method for testing a transmission line including echo cancellers that includes measuring echo before activating the echo canceller for testing (column 6, lines 49-52; column 9, lines 1-8). It would have been obvious to one skilled in the art at the time of the invention to apply echo premeasurement as taught by Légaré to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of evaluating the same parameters under different conditions. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements

of Claim 53 except using combined loss as a measurement of echo canceller performance. Meek discloses measuring convergence (i.e., echo canceller performance) with combined attenuation (i.e., combined loss). It would have been obvious to one skilled in the art at the time of the invention to apply echo canceller performance measurement by combined attenuation as taught by Meek to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of determining echo canceller performance.

62. Claims 22, 31 and 65 through 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Interrante in view of Fraser and further in view of Tendo and further in view of Légaré and further in view of Suzuki (US Patent 5,533,121).

63. Claim 22 claims the system of Claim 20 wherein the preamble portion is a correlated PCM sequence capable of being differentiated from the test portion of the excitation signal. As stated above apropos of Claim 20, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, as stated above apropos of Claim 8, the control word disclosed by Interrante that corresponds to the preamble claimed is distinguishable from the test data that corresponds to the test portion claimed. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 22 with the exception of the preamble portion being a correlated PCM sequence. Suzuki discloses controlling an echo canceller with a predetermined (i.e., correlated) PCM pattern (i.e., sequence) (column 3, lines 8-16). It would have been obvious to one skilled in the art at the time of the invention to apply controlling an echo canceller with a predetermined PCM pattern as taught by Suzuki to the

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combination of Interrante, Fraser, Tendo and Légaré for the purpose of providing in band control of the echo canceller.

64. Claim 31 is essentially similar to Claim 22 and is rejected for the same reasons.
65. Claim 66 claims the system of Claim 31 including a tail circuit for generating an echo back signal responsive to the test portion of the excitation signal. As stated above apropos of Claim 31, the combination of Interrante, Fraser, Tendo, Légaré and Suzuki makes obvious all elements of that claim. In addition, Interrante discloses an echo path simulator (Fig. 1, reference 30; column 2, lines 55-61) that corresponds to the tail circuit claimed and simulates an echo path of the communications network (i.e., generates an echo back signal) (column 3, lines 24-28) in response to test data (column 3, lines 38-41) that corresponds to the test portion claimed. Claim 66 further claims the system includes recording means for recording any received echo signal allowed to pass through the echo canceller. Interrante discloses a test data extraction unit (Fig. 1, reference 40; column 2, lines 62-67) that corresponds to the recording means claimed and stores (i.e., records) echo-cancelled test data (i.e., any received echo signal allowed to pass through the echo canceller) (column 4, lines 1-5). Therefore, the combination of Interrante, Fraser, Tendo, Légaré and Suzuki makes obvious all elements of Claim 66.
66. Claim 65 claims the method of Claim 66 including controlling the echo canceller during testing to within 125 microseconds. As stated above apropos of Claim 64, the combination of Interrante, Fraser, Tendo, Légaré and Meek makes obvious all elements of that claim. Therefore, the combination of Interrante, Fraser, Tendo, Légaré and Suzuki is shown to make obvious all elements of Claim 65 with the exception of controlling the echo canceller during testing to within 125 milliseconds. Examiner has taken uncontested Official Notice of the fact that a time

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slot on a DS1 signal has a duration of  $1/(8000 \times 24)$  seconds or 5.2 microseconds. It would have been obvious to one skilled in the art at the time of the invention to control the combination of Interrante, Fraser, Tendo, Légaré and Suzuki to within 5.2 microseconds for the purpose of selecting a timeslot within a DS1 signal.

67. Claim 67 claims the system of Claim 31 wherein the preamble portion sets timing associated with performance tests defined in ITU-T G.165 and G.168 standards. As stated above apropos of Claim 31, the combination of Interrante, Fraser, Tendo, Légaré and Suzuki makes obvious all elements of that claim. In addition, Interrante discloses encoding test timing instruction in the control word that corresponds to the preamble portion claimed. Therefore, the combination of Interrante, Fraser, Tendo, Légaré and Suzuki is shown to make obvious all elements of Claim 67 with the exception of using performance tests defined in ITU-T G.165 and G.168 standards. It would have been obvious to one skilled in the art at the time of the invention to apply the use of performance tests defined in ITU-T G.165 and G.168 standards to the combination of Interrante, Fraser, Tendo, Légaré and Suzuki for the purpose of conforming to established standards.

68. Claim 68 claims the system of Claim 31 wherein the preamble portion identifies a type of test portion. As stated above apropos of Claim 31, the combination of Interrante, Fraser, Tendo, Légaré and Suzuki makes obvious all elements of that claim. In addition, Interrante discloses encoding test timing instruction in the control word that corresponds to the preamble portion claimed. Therefore, the combination of Interrante, Fraser, Tendo, Légaré and Suzuki is shown to make obvious all elements of Claim 68 with the exception of the preamble portion identifying a type of test portion. Légaré discloses an automated method for testing a transmission line

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including echo cancellers that includes test initialization (column 4, lines 46-51). It would have been obvious to one skilled in the art at the time of the invention to apply test initialization as taught by Légaré to the combination of Interrante, Fraser, Tendo, Légaré and Suzuki for the purpose of setting up the desired mode of operation.

69. Claim 69 claims the system of Claim 31 wherein the preamble portion identifies a performance test. As stated above apropos of Claim 31, the combination of Interrante, Fraser, Tendo, Légaré and Suzuki makes obvious all elements of that claim. In addition, Interrante discloses encoding a number identifying the timeslot to be tested (column 3, lines 31-33). Therefore, the combination of Interrante, Fraser, Tendo, Légaré and Suzuki makes obvious all elements of Claim 69.

70. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Interrante in view of Fraser and further in view of Tendo and further in view of Légaré and further in view of Younce et al. (US Patent 5,274,705).

71. Claim 24 claims the system of Claim 23 with the echo canceller including an H-register and a non-linear processor and the configuration information including instructions related to an adaptation function in the echo canceller. As stated above apropos of Claim 23, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. In addition, Interrante discloses the echo canceller having an adaptive filter (i.e., an H-register) (column 1, lines 30-32). Therefore, the combination makes obvious all elements of Claim 24 except a non-linear processor and the configuration information including instructions related to an adaptation function in the echo canceller. Légaré discloses an automated method for testing a transmission

line including echo cancellers that includes disabling the echo canceller (i.e., instructions related to an adaptation function in the echo canceller) (column 8, line 65 through column 9, line 1). It would have been obvious to one skilled in the art at the time of the invention to apply echo canceller disabling as taught by Légaré to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of evaluating the same parameters under different conditions. Therefore, the combination makes obvious all elements of Claim 24 except a non-linear processor. Younce discloses an echo canceller including a non-linear processor (Fig. 5, reference NLP; column 1, lines 45-55). It would have been obvious to one skilled in the art at the time of the invention to apply a non-linear processor as taught by Younce to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of removing low-level residual echo.

72. Claims 44, 50, 56, 62 and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Interrante in view of Fraser and further in view of Tendo and further in view of Légaré and further in view of Tol et al. (US Patent 4,918,685).

73. Claim 44 claims the computer readable medium of Claim 45 including inhibiting adaptation and clearing a register in the echo canceller. As stated above apropos of Claim 45, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. Further, as stated above apropos of Claim 1, Interrante discloses a control word that corresponds to the preamble portion claimed and causes test data to be delivered to the echo canceller. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 44 with the exception of the test data resulting in inhibiting adaptation and clearing a register in the echo canceller. Tol discloses echo canceller testing by applying a

random data sequence that results in the echo canceller coefficients being adjusted to zero (i.e., inhibiting adaptation and clearing a register) (column 2, lines 23-37). It would have been obvious to one skilled in the art at the time of the invention to apply the random test signal taught by Tol to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of determining if the echo canceller is functioning in the proper manner.

74. Claim 50 claims the method of Claim 5 including instructions in the preamble portion that when executed by the echo canceller result in inhibiting adaptation and clearing a register in the echo canceller. As stated above apropos of Claim 5, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. Further, as stated above apropos of Claim 1, Interrante discloses a control word that corresponds to the preamble portion claimed and causes test data to be delivered to the echo canceller. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 50 with the exception of the test data resulting in inhibiting adaptation and clearing a register in the echo canceller. Tol discloses echo canceller testing by applying a random data sequence that results in the echo canceller coefficients being adjusted to zero (i.e., inhibiting adaptation and clearing a register) (column 2, lines 23-37). It would have been obvious to one skilled in the art at the time of the invention to apply the random test signal taught by Tol to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of determining if the echo canceller is functioning in the proper manner.

75. Claim 56 claims the method of Claim 11 including inhibiting adaptation and clearing a register in the echo canceller responsive to the preamble portion. As stated above apropos of Claim 11, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements

of that claim. Further, as stated above apropos of Claim 1, Interrante discloses a control word that corresponds to the preamble portion claimed and causes test data to be delivered to the echo canceller. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 56 with the exception of inhibiting adaptation and clearing a register in the echo canceller responsive to the preamble portion. Tol discloses echo canceller testing by applying a random data sequence that results in the echo canceller coefficients being adjusted to zero (i.e., inhibiting adaptation and clearing a register) (column 2, lines 23-37). It would have been obvious to one skilled in the art at the time of the invention to apply the random test signal taught by Tol to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of determining if the echo canceller is functioning in the proper manner.

76. Claim 62 claims the system of Claim 23 wherein the decoding means inhibits adaptation and clears a register in the echo canceller responsive to the preamble portion. As stated above apropos of Claim 23, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. Further, as stated above apropos of Claim 1, Interrante discloses a control word that corresponds to the preamble portion claimed and causes test data to be delivered to the echo canceller. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 62 with the exception of inhibiting adaptation and clearing a register in the echo canceller. Tol discloses echo canceller testing by applying a random data sequence that results in the echo canceller coefficients being adjusted to zero (i.e., inhibiting adaptation and clearing a register) (column 2, lines 23-37). It would have been obvious to one skilled in the art at the time of the invention to apply the random test signal taught

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by Tol to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of determining if the echo canceller is functioning in the proper manner.

77. Claim 73 claims the medium of Claim 47 including inhibiting adaptation and clearing a register in the echo canceller. As stated above apropos of Claim 47, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of that claim. Further, as stated above apropos of Claim 1, Interrante discloses a control word that corresponds to the preamble portion claimed and causes test data to be delivered to the echo canceller. Therefore, the combination of Interrante, Fraser, Tendo and Légaré makes obvious all elements of Claim 73 with the exception of inhibiting adaptation and clearing a register in the echo canceller. Tol discloses echo canceller testing by applying a random data sequence that results in the echo canceller coefficients being adjusted to zero (i.e., inhibiting adaptation and clearing a register) (column 2, lines 23-37). It would have been obvious to one skilled in the art at the time of the invention to apply the random test signal taught by Tol to the combination of Interrante, Fraser, Tendo and Légaré for the purpose of determining if the echo canceller is functioning in the proper manner.

#### *Response to Arguments*

78. Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Swerdlow whose telephone number is 703-305-4088. The examiner can normally be reached on Monday through Friday between 8:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forrester Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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